

AMENDMENTS TO THE CLAIMS

The following listing of claims,in which text to be added is underlined and text to be deleted is surrounded by brackets, will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (cancelled)

2-12. (withdrawn)

13. (currently amended) A radially expandable artificial valve prosthesis for deployment in a bodily passage, comprising:

a valve structure, including a plurality of leaflets adapted to restrict fluid flow therethrough;

a support structure attached to the valve structure;

wherein each of the plurality of leaflets has a length and a distal end and is oriented closely with the longitudinal axis of the bodily passage throughout the majority of the length [lengths thereof] with the distal portion [distal portions thereof] extending circumferentially and distally to form a seal with at least one of the walls of the bodily passage and the support structure; and

wherein the configuration of the leaflets creates pockets between the leaflets and the walls of the bodily passage of sufficient size and shape to facilitate the creation of retrograde flow patterns capable of reducing stagnation of fluid therein.

14-15. (withdrawn)

16. (cancelled)

17. (currently amended) A radially expandable artificial valve prosthesis for deployment in a bodily passage, comprising:

a valve structure comprising one or more leaflets adapted to restrict fluid flow therethrough, the leaflets includes an inner edge;

a support structure configured to carry the valve structure;

wherein the support structure includes one or more longitudinal attachment struts along which the at least a portion leaflets are attached, the longitudinal attachment struts oriented substantially longitudinally with respect to the device such that the leaflet are coaptalbe with one another over a substantial portion of their length when the device is implanted within the body passage; and

[The radially expandable artificial valve prosthesis of claims 16,] wherein the support structure comprises a first and a second substantially parallel longitudinal attachment struts and a pair of opposing leaflets attached therealong.

18-20. (withdrawn)

21. (currently amended) The radially expandable artificial valve prosthesis of claim 17 [16], wherein the two longitudinal attachment struts extend generally parallel to one another from each of the commissural points.

22. (currently amended) A radially expandable artificial valve prosthesis for implantation in a vessel comprising:

a support structure having a first end that includes at least a first and a second commissure, and second end located distal thereto;

a plurality of leaflets, each having an outer edge that includes a first lateral edge extending distally from the first commissure and a second lateral edge [portion] extending distally from the second commissure, the first and second lateral edges generally converging about the second end such that the plurality of leaflets collectively form a seal with the walls of the vessel and cooperate with one another to restrict fluid flow therethrough; and

wherein the first and second lateral edges are each attached to the support structure along an attachment pathway that includes a first, proximal portion comprising a substantial portion of the length of the prosthesis having primarily a longitudinal orientation with respect to the longitudinal axis of the prosthesis, and a second, distal portion angling obliquely from the first, proximal [first] portion such that plurality of leaflets each comprise an extensive coaptal portion that defines the side of a large pocket located adjacent to each leaflet, and a basal portion that defines the bottom of the pocket when the prosthesis is implanted within the vessel.

23. (previously presented) A radially expandable artificial valve prosthesis for implantation in a vessel comprising:

a support structure having a first end that includes a first and a second commissure, and second end located distal thereto;

a pair of leaflets, each having an outer edge that includes a first lateral edge extending distally from the first commissure and a second edge portion extending distally from the second commissure, the first and second lateral

edges generally converging about the second end such that the plurality of leaflets collectively form a seal with the walls of the vessel and cooperate with one another to restrict fluid flow therethrough; and

wherein the first and second lateral edges are each attached about a first strut that extends from the first and second commissure structure along an attachment pathway that includes a first, proximal portion comprising a substantial portion of the length of the prosthesis having primarily a longitudinal orientation with respect to the longitudinal axis of the prosthesis, and a second, distal portion angling obliquely from the first portion such that plurality of leaflets each comprise an extensive coaptation portion that defines the side of a large pocket located adjacent to each leaflet, and a basal portion that defines the bottom of the pocket when the prosthesis is implanted within the vessel.

24. (previously presented) A radially expandable artificial valve prosthesis for deployment in a bodily passage, comprising:

a valve structure, including a plurality of leaflets adapted to restrict fluid flow therethrough, each of the plurality of leaflets comprising a free inner edge and an outer edge that includes a first and second lateral outer edge which interconnect distally to form a bottom edge;

a support structure comprising a series of proximal bends comprising commissural points for the attachment of the plurality of leaflets; and longitudinal attachment struts extending distally therefrom, the support structure further comprising a pair of distal attachment struts extending distally and circumferentially from the longitudinal attachment struts; and

wherein the lateral outer edges are attached proximally along the longitudinal attachment struts to form an extensive leaflet contact area, and distally long the distal attachment struts which converge laterally and carry the bottom edge of each of the plurality of leaflets such that the prosthesis is adapted for forming a seal between the plurality of leaflets and the walls of the bodily passage and creating a large pocket at the base of each of the plurality of leaflets that is of sufficient size and shape such that fluid flowing in the retrograde direction is capable of achieving flow patterns that reduce stagnation of fluid therein.

25. (previously presented) The radially expandable artificial valve prosthesis of claim 24, wherein the longitudinal attachment struts are sized to create a leaflet contact area that comprises 10-80% of the length of the valve structure.

26. (previously presented) The radially expandable artificial valve prosthesis of claim 24, wherein the longitudinal attachment struts are sized to create a leaflet contact area that comprises 30-60% of the length of the valve structure.

27. (previously presented) The radially expandable artificial valve prosthesis of claim 24, wherein the longitudinal attachment struts are sized to create a leaflet contact area that comprises 35-55% of the length of the valve structure.

28. (currently amended) A radially expandable artificial valve prosthesis for deployment in a bodily passage, comprising:

a pair of opposing leaflets configured to cooperate with one another to restrict fluid flowing therethrough, each of the opposing leaflets having proximal portion a distal portion, an inner edge configured to traverse [traversing] the lumen of the bodily passage and an outer edge comprising a first and second lateral outer edge;

wherein the outer edges of the opposing leaflets include an attachment pathway coextending therealong, wherein the attachment pathway is configured to be attached to [comprises an attachment with] at least one of a support frame and the inner walls of the bodily passage such that the attachment pathway defines the shape and configuration of the plurality of leaflets when the prosthesis is implanted in the bodily passage, and

wherein attachment pathway comprises extends along the first and the second lateral outer edge of each leaflet, each of the first a second lateral outer edges including a proximal attachment pathway portion having a substantially longitudinal orientation with respect to the prosthesis such that a large leaflet contact area is established between the opposing leaflets, and

distal attachment pathway portion which converges with that of the other of the first and second lateral outer edge to define a bottom edge of the leaflet such that the bottom portion of the leaflet angles extend laterally from the substantially longitudinally aligned proximal portion in a manner that forms a seal and creates a wide pocket about the junction of the proximal and distal portions that is adapted for creating retrograde flow patterns sufficient to reduce stagnation of fluids therein.

29. (cancelled)